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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/312,728 05/14/99 BERLOWITZ P LAW748

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EXAMINER

ALEJANDRO, R

ART UNIT

PAPER NUMBER

1745

DATE MAILED:

11/30/00

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/312,728

Applicant(s)

BERLOWITZ ET AL.

Examiner

Raymond Alejandro

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2000.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application; (PTO-152)
- 20) ☐ Other:

DETAILED ACTION***Response to Amendment***

This communication is responsive to the amendment filed on 10/06/00. The applicants have overcome the objection and the 35 USC 112 rejection. However, the claims are finally rejected as the 35 USC 103 rejection still stands for the reasons of record. The IDS submitted on 09/22/00 has been made of record.

Claim Rejections - 35 USC § 103

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuglevand et al 6030718 in view of Lyon 5827496.

The instant claims are drawn to a fuel cell system wherein the alleged inventive concept comprises the use of a source of fuel and water emulsion.

Fuglevand et al disclose a fuel cell power system having a chemical reformer which produces a supply of hydrogen for use by the power system. In this regard, the hydrogen recovery and recycling system would recover or recapture unreacted hydrogen, which has previously passed through the individual fuel cell. This, system would separate the unreacted hydrogen from other contaminants and return it to the power system. In the alternative, a chemical reformer is, and the unreacted hydrogen would be returned to the chemical reformer where it would again be delivered to the individual fuel cell modules (col 6, lines 6-58).

Fuglevand et al teach that the fuel cells have been used as alternative power sources in earth and space applications, for examples, space vehicles (col 1, lines 30-35).

Fuglevand et al disclose the source of hydrogen is illustrated as a pressurized container which is received in the enclosure, see Figure 1. However, it is anticipated that other means are employed for supplying a suitable quantity of hydrogen to the hydrogen distribution assembly. In this regard, a chemical reformer or fuel reformer could be utilized and enclosed within or outside of the enclosure and which would, by chemical reaction, produce a suitable quantity of hydrogen. The chemical reformer would then, by means of a chemical reaction, strip away the hydrogen component of the hydrogen rich fluid for delivery to the hydrogen distribution assembly (col 26, lines 19-56).

Fuglevand et al disclose a fuel cell system according to the foregoing. However, Fuglevand et al do not disclose the fuel and water emulsion.

Lyon discloses methods and systems for transferring heat in a combustion system. One example is the industrial process known as steam reforming in which hydrogen is produced by passing steam and a hydrocarbon through a catalyst (abstract/ col. 2, lines 21-41). Figure 4 illustrate a packed bed reactor system for producing high purity hydrogen for use in fuel cells. It is also taught the use of unmixed combustion to produce hydrogen for fuel cells. A supply provides a flowing stream of steam and a liquid or gaseous hydrocarbon. The hydrocarbon or reducing gas can be natural gas, a reducing gas selected from the group consisting of diesel fuel, jet fuel, **and an emulsion of a hydrocarbon in water or carbon monoxide**. This valve, then, directs the flowing stream into the top of a reactor. Both sections of the reactor contain a mixture of two catalysts (col 11, line 20 to col. 12, line 37).

In view of these disclosures, it would have been obvious to one skilled in the art at the time the invention was made to use the emulsion of a hydrocarbon in water of Lyon in the fuel

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cell system of Fuglevand et al as Lyon teaches that exposing a reducing gas as a water-hydrocarbon emulsion and a gas containing molecular oxygen to an unmixed combustion catalyst to respectively reduce and oxidize the unmixed combustion catalyst provides alternating reduction and oxidation reactions enabling the unmixed combustion catalyst to efficiently release heat to a heat receiver in efficient thermal contact with the unmixed combustion catalyst that is placed in a reactor bed of a combustion system.

Response to Arguments

Applicant's arguments filed 10/06/00 have been fully considered but they are not persuasive. The assertion that the prior art of record does not teach that the emulsion can be used for a fuel cell is not sufficient to overcome this rejection. It is noted that the reference teaches hydrogen which is produced from an emulsion to be used for conventional fuel cell systems. In that, the examiner points out that, as well known in the art, the reformer transforms the emulsion content to a hydrogen containing gas which is used to feed the fuel cell system. So, the emulsion of the instant claims is not employed directly into the fuel cell. Instead, the emulsion is being processed in the reformer to produce suitable hydrogen gas to generate electrical power. A reformer is an element/member of a fuel cell system strictly utilizes to provide/produce hydrogen containing gas. Thus, the feeding stream that is employed to fuel the fuel cell system is hydrogen gas not an emulsion.

As to the fuel cell system on board a vehicle, it is noted that Fuglevand et al teach that the fuel cells have been used as alternative power sources in earth and space applications, for

examples, space vehicles (col 1, lines 30-35). Hence, the reference clearly teaches the particular use for the fuel cell system which is the same as the use of the instant claims.

Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (703) 306-3326. The examiner can normally be reached from Mon- Thursday 8:00 am - 6:30 pm .

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's acting supervisor, Carol Chaney/ Steve Kalafut can be reached on (703) 305-3777 / (703) 308-0433.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3599 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Raymond Alejandro
Examiner
Art Unit 1745

STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP

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